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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,254	04/20/2004	Koichi Kondo	251354US2RDDIV	2392
22850	7590	07/17/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			SAXENA, AKASH	
			ART UNIT	PAPER NUMBER
			2128	

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/827,254	KONDO, KOICHI	
	Examiner	Art Unit	
	Akash Saxena	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/20/04 7/15/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-9 have been presented for examination based on the application filed on 20th April 2004.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on March 31st 2000. It is noted, however, that applicant has not filed a certified copy of the 2000-099874 application as required by 35 U.S.C. 119(b).
3. Acknowledgement is made to domestic priority under 35 U.S.C. 119(e) to application 09/817148 filed on 27th March 2001.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract is directed to building the model from polygons and not performing the kinematic simulation as claimed.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 9 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Software per se.

Claim 9 discloses a program product, however the specification does not disclose a program product specifically for the current inventions and at best discloses software (described as modules) (Specification Pg. 29 – Paragraph related to Fig.25).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by

Technical report “Incremental algorithms for collision detection between solid models” by M.K. Ponamgi et al in 1994-97 (Ponamgi hereafter). Also published in IEEE¹.

Regarding Claim 1

Ponamgi teaches a method of kinematics simulation (Ponamgi: Introduction - as interaction & collision between solid models simulation) using polygonal shape data (using polytopes – which are polygons in 2D and polyhedrons in 3D- Pg.4) in which at least a portion of a shape is approximated by a combination of a plurality of polygons (Ponamgi: Abstract, Introduction); the method comprising obtaining shape data of analytic surface expression by fitting partial sets of the polygons to analytic surfaces (Ponamgi: Pg.21 ¶3rd), wherein the analytic surfaces include at least one of a cone, torus, and cylinder (Ponamgi: Torus-Pg.10 Section 4.2 ¶1, Fig.6, Fig.12; Cylinder – Pg. 13 Fig.8, Pg.21 Fig.13 –Body modeled as cylinder); generating an assembly model based on defining a pair relationship (Ponamgi: Fig.13, Fig.11)

including coaxial relationship between the analytic surfaces (Ponamgi: Fig.8), the assembly model expressing a positional relationship among a plurality of components thereof (Ponamgi: Fig.13, Section5.1) and the positional relationship corresponding to the pair relationship (Ponamgi: Pg.19-20 - Section 5 – chain interlocked Tori – made from polyhedron- using octree with hierarchies having relation and position); and performing a mechanical simulation by computing positions of the components according to the positional relationship (Ponamgi: Section 5 – chain interlocked Tori simulation; Section 4.1 Thread insertion simulation).

Regarding Claim 2

Ponamgi teaches selecting at least one or more polygons from the polygonal shape data in accordance with a predetermined selection criterion (Ponamgi: Pg. 21¶3); and determining an analytic surface to be assigned for the one or more polygons (Ponamgi: Pg.21 ¶3 – using polygon to make threads and cylindrical body).

Regarding Claim 3

Ponamgi teaches calculating a first representation of a first analytic surface of a first component (Ponamgi: Pg. 21-22, the threads in bolt); calculating a second representation of a second analytic surface of a second component (Ponamgi: Pg. 21-22, the threads in nut); and performing an interference check for checking the presence/absence of geometric interference between the first component and the second component, according to the first representation and the second

¹ Incremental algorithms for collision detection between polygonal models; Ponamgi, M.K.; Manocha, D.;

representation (Ponamgi: Table 2, Pg. 21-22 as collision detection between the nut and bolt).

Regarding Claim 4

Ponamgi teaches first representation includes a central axis of the first component and the second representation includes a central axis of the second component as first (bolt) and second component (nut) and the collision algorithm applied to detect all possible contacts between the polygons forming these components which are centroid axis aligned (Ponamgi: Pg. 20-21, Pg. 10 Section 4.2; Pg.2 Axis Aligned for each component)

Regarding Claim 5

Ponamgi teaches an apparatus (Ponamgi: Pg. 22) where the limitations presented in claim 5 are similar to claim 1 limitations and are rejected likewise.

Regarding Claim 6-8

Apparatus claims 6-8 disclose similar limitations as claims 2-4 and are rejected for the same reasons as claims 2-4 respectively.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Technical report “Incremental algorithms for collision detection between solid models” by M.K. Ponamgi et al (Ponamgi hereafter), in view of ACM Article “I-COLLIDE: An interactive and Exact Collision Detection System for Large Scale Environments” by J.D. Cohen et al in 1995 (Cohen hereafter).

Regarding Claim 9

Ponamgi’s teachings are presented in claim 1 rejection above.

Ponamgi does not detail specific application software running on a system.

Cohen teaches I-Collide as a system and algorithm (thereby embodied as software on the system) implementing the concept taught by Ponamgi.

It would have been obvious to one (e.g. a designer) of ordinary skill in the art at the time the invention was made to apply the teachings of Cohen to Ponamgi to design a software to implement the concept taught by Ponamgi. The motivation to combine would have been that Ponamgi briefly describes using a system (Ponamgi: Pg.22) without providing much detail, whereby Cohen remedies and provides more details of the I-Collide system/Application (Cohen: Pg. 194 section 6). Ponamgi also is the co-author of the Cohen paper.

Conclusion

8. All claims are rejected.
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
10. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant.

Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akash Saxena whose telephone number is (571) 272-8351. The examiner can normally be reached on 9:30 - 6:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini S. Shah can be reached on (571)272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Friday, July 07, 2006



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